奇美電子 CHIMEI INNOLUX

PRODUCT SPECIFICATION

☐ Tentative Specification
☐ Preliminary Specification
■ Approval Specification

MODEL NO.: V216B1
SUFFIX: L04

Customer:

APPROVED BY **SIGNATURE**

Name / Title _____ _____

Note:

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By
Chao-Chun Chung	Roger Huang	Carlos Lee

CONTENTS

REVISION HISTORY

Version	Date	Page(New)	Section	Description
Ver 2.0	Nov. 23,'09	All	All	Approval Specification was first issued.
Ver 2.1	Jul. 06,'10	30	10	Modified package method (from paper(13pcs/box) to EPE 11pcs/box).

1. GENERAL DESCRIPTION

1.1 OVERVIEW

V216B1-L04 is a 21.6″ TFT Liquid Crystal Display module with a 4-CCFL Backlight unit and a 30pin 1ch-LVDS interface. This module supports 1366 x 768 (16:9 wide screen) formats and can display 16.7M colors (6-bit+Hi-FRC colors). The inverter for backlight is not built-in.

1.2 FEATURES

- Excellent brightness (400 nits)
- Contrast ratio (800:1)
- Fast response time (5 ms)
- Color saturation (NTSC 72%)
- 1366 x 768 pixels (16:9 wide screen) resolution
- DE (Data Enable) only mode
- LVDS (Low Voltage Differential Signaling) interface
- Viewing angle : 170(H)/160(V) (CR>10) TN technology
- RoHS compliance

1.3 APPLICATION

- Standard Living Room TVs
- MFM Application

1.4 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	477.417(H) x 268.416 (V) (21.6″ diagonal)	mm	(1)
Bezel Opening Area	481.5 (H) x 272.5 (V)	mm	
Driver Element	a-si TFT active matrix		
Pixel Number	1366 x R.G.B. x 768	pixel	
Pixel Pitch(Sub Pixel)	0.1165 (H) x 0.3495 (V)	mm	
Pixel Arrangement	RGB vertical stripe		
Display Colors	16.7M	color	
Display Operation Mode	Transmissive mode / Normally white		
Surface Treatment	Anti-Glare coating (Haze 25%), Hard coating(3H)		

Note (1) Please refer to the attached drawings in chapter 11 for more information about the front and back outlines.

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal (H)	500.3	501	501.7	mm	(1)
	Vertical (V)	296.4	297	297.6	mm	(1)
	Depth (D)	16.8	17.3	17.8	mm	(2)
Weight		–	2300	–	g	

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

Note (2) Module Depth is between bezel to T-CON cover.

2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-20	+60	°C	(1)
Operating Ambient Temperature	T_{OP}	0	50	°C	(1) (2)
Shock (Non-Operating)	S_{NOP}	—	50	G	(3) (5)
Vibration (Non-Operating)	V_{NOP}	—	1.0	G	(4) (5)

Note (1) Temperature and relative humidity range is shown in the figure below.

(a) 90 %RH Max. (Ta ≦ 40 °C).

(b) Wet-bulb temperature should be 39 °C Max. (Ta > 40 °C).

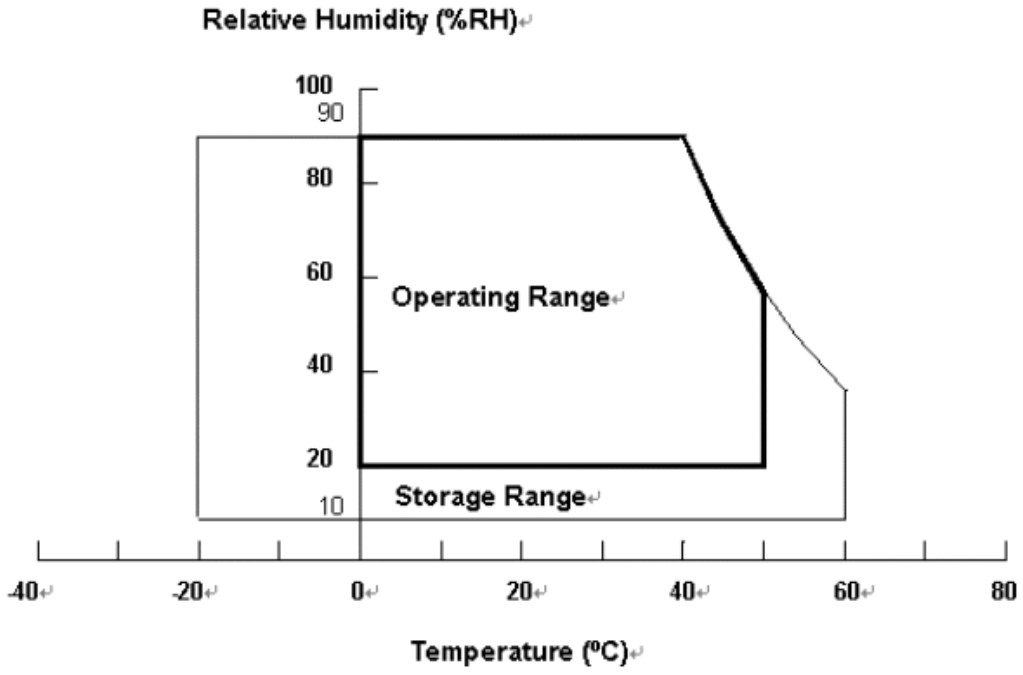
(c) No condensation.

Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 65 °C with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 65 °C. The range of operating temperature may degrade in case of improper thermal management in final product design.

Note (3) 11 ms, half sine wave, 1 time for ± X, ± Y, ± Z.

Note (4) 10 ~ 200 Hz, 10 min, 1 time each X, Y, Z.

Note (5) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.



2.2 PACKAGE STORAGE

When storing modules as spares for a long time, the following precaution is necessary.

(a) Do not leave the module in high temperature, and high humidity for a long time, it is highly recommended to store the module with temperature from 0 to 35 ℃ at normal humidity without condensation.

(b) The module shall be stored in dark place. Do not store the TFT-LCD module in direct sunlight or fluorescent light.

2.3 ELECTRICAL ABSOLUTE RATINGS

2.3.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	V_{CC}	-0.3	6.0	V	(1)
Logic Input Voltage	V_{IN}	-0.3	3.6	V	

2.3.2 BACKLIGHT UNIT

Item	Symbol	Test Condition	Min.	Type	Max.	Unit	Note
Lamp Voltage	V_W	Ta = 25 ℃	—	—	3000	V_{RMS}	

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Functional operation should be restricted to the conditions described under normal operating conditions.

Note (2) No moisture condensation or freezing.

3. ELECTRICAL CHARACTERISTICS

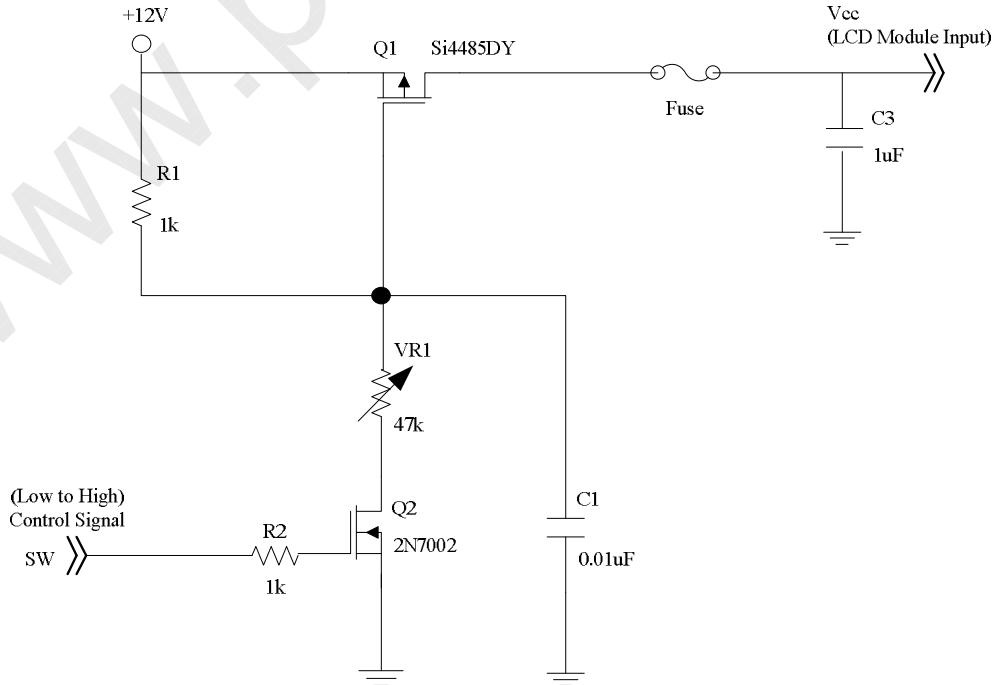
3.1 TFT LCD MODULE

(Ta = 25 ± 2 ºC)

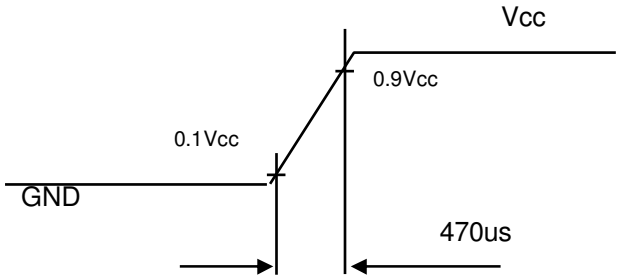
Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V_{CC}	4.5	5.0	5.5	V	(1)
Rush Current		I_{RUSH}	–	–	3.0	A	(2)
Power Supply Current	White	–	–	0.40	–	A	(3)
	Black	–	–	0.53	0.61	A	
	Vertical Stripe	–	–	0.50	–	A	
LVDS interface	Differential Input High Threshold Voltage	V_{LVTH}	+100	–	–	mV	(4)
	Differential Input Low Threshold Voltage	V_{LVTL}	–	–	-100	mV	
	Common Input Voltage	V_{CM}	1.0	1.2	1.4	V	
	Differential input voltage	$\|V_{ID}\|$	200	–	600	mV	
	Terminating Resistor	R_T	–	100	–	ohm	
CMOS interface	Input High Threshold Voltage	V_{IH}	2.7	–	3.3	V	
	Input Low Threshold Voltage	V_{IL}	0	–	0.7	V	

Note (1) The module should be always operated within the above ranges.

Note (2) Measurement condition:

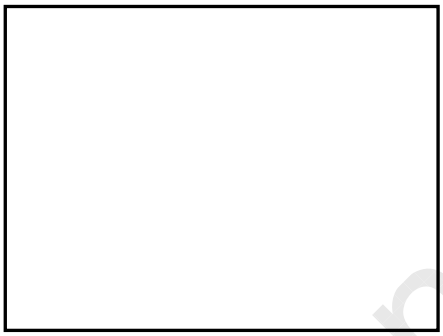


Vcc rising time is 470us



Note (3) The specified power supply current is under the conditions at Vcc = 5 V, Ta = 25 ± 2 °C, f_v = 60 Hz, whereas a power dissipation check pattern below is displayed.

a. White Pattern

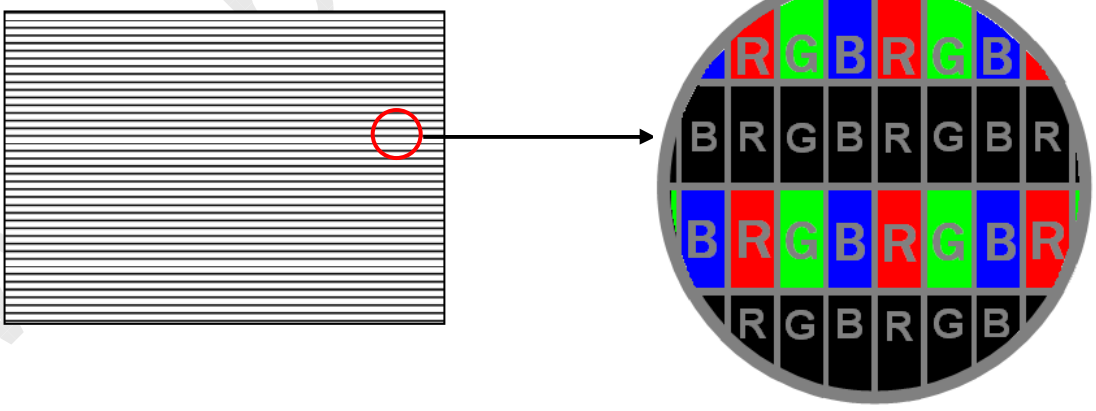


Active Area

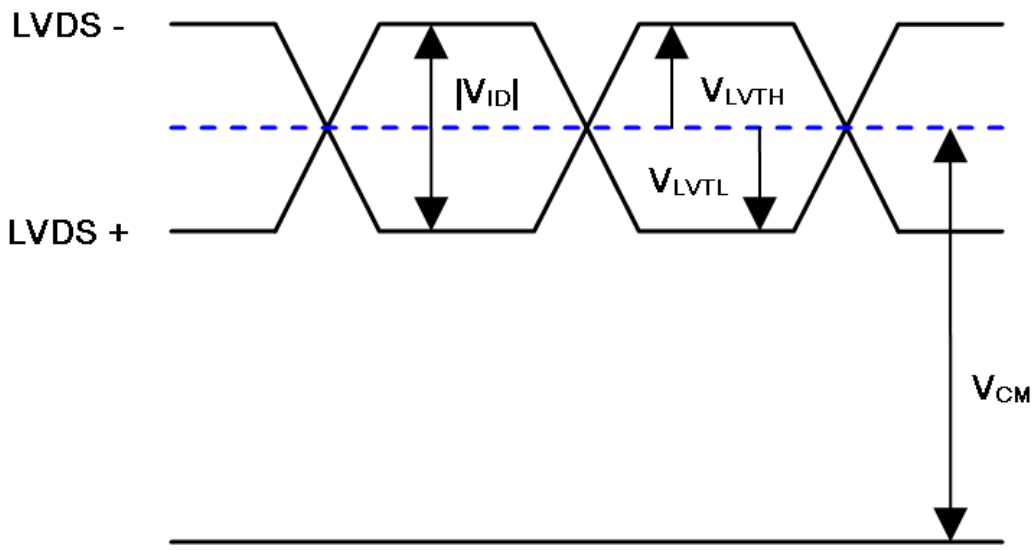
b. Black Pattern

Active Area

c. Horizontal Pattern



Note (4) The LVDS input characteristics are as follows:



3.2 CCFL (Cold Cathode Fluorescent Lamp) CHARACTERISTICS (Ta = 25 ± 2 ℃)

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Lamp Voltage	V_W	—	810	—	V_{RMS}	I_L = 7.0mA
Lamp Current	I_L	6.0	7.0	8.0	mA_{RMS}	
Lamp Turn On Voltage	Vs	—	—	1250	V_{RMS}	(2), Ta = 25 ℃
		—	—	1450	V_{RMS}	(2), Ta = 0 ℃
Operating Frequency	F_L	30	—	80	KHz	(3)
Lamp Life Time	L_{BL}	50000	—	—	Hrs	(4)

Note (1) The waveform of the voltage output of inverter must be area-symmetric and the design of the inverter must have specifications for the modularized lamp. The performance of the Backlight, such as lifetime or brightness, is greatly influenced by the characteristics of the DC-AC inverter for the lamp. All the parameters of an inverter should be carefully designed to avoid producing too much current leakage from high voltage output of the inverter. When designing or ordering the inverter please make sure that a poor lighting caused by the mismatch of the Backlight and the inverter (miss-lighting, flicker, etc.) never occurs. If the above situation is confirmed, the module should be operated in the same manners when it is installed in your instrument.

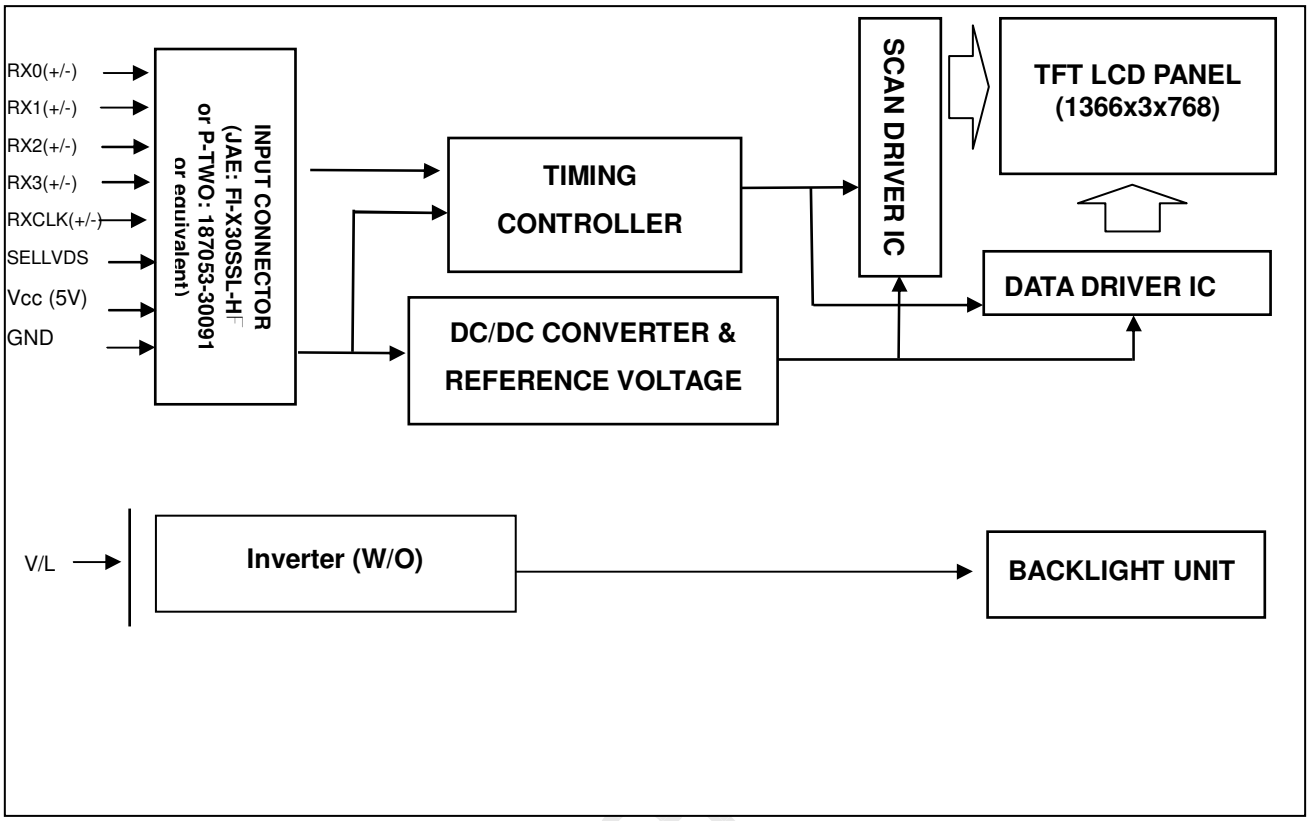
Note (2) The lamp starting voltage V_S should be applied to the lamp for more than 1 second after startup. Otherwise the lamp may not be turned on.

Note (3) The lamp frequency may produce interference with horizontal synchronous frequency of the display input signals, and it may result in line flow on the display. In order to avoid interference, the lamp frequency should be detached from the horizontal synchronous frequency and its harmonics as far as possible.

Note (4) The life time of a lamp is defined as when the brightness is larger than 50% of its original value and the effective discharge length is longer than 80% of its original length (Effective discharge length is defined as an area that has equal to or more than 70% brightness compared to the brightness at the center point of lamp.) as the time in which it continues to operate under the condition at Ta = 25 ±2℃ and I_L = 7.0 mArms.

4. BLOCK DIAGRAM OF INTERFACE

4.1 TFT LCD MODULE



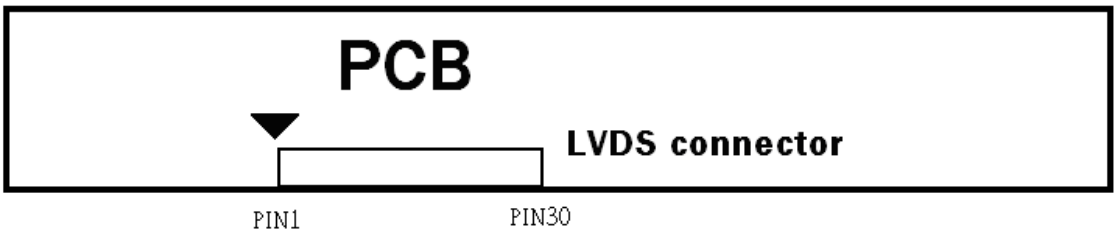
5. INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT LCD Module Input

Pin No.	Symbol	Description	Note
1	NC	No connection	(2)
2	NC	No connection	(2)
3	NC	No connection	(2)
4	GND	Ground	
5	RX0-	Negative transmission data of pixel 0	
6	RX0+	Positive transmission data of pixel 0	
7	GND	Ground	
8	RX1-	Negative transmission data of pixel 1	
9	RX1+	Positive transmission data of pixel 1	
10	GND	Ground	
11	RX2-	Negative transmission data of pixel 2	
12	RX2+	Positive transmission data of pixel 2	
13	GND	Ground	
14	RXCLK-	Negative of clock	
15	RXCLK+	Positive of clock	
16	GND	Ground	
17	RX3-	Negative transmission data of pixel 3	
18	RX3+	Positive transmission data of pixel 3	
19	GND	Ground	
20	NC	No connection	(2)
21	SELLVDS	Select LVDS data format	(3)
22	NC	No connection	
23	GND	Ground	
24	GND	Ground	
25	NC	No connection	(2)
26	VCC	Power supply: +5V	
27	VCC	Power supply: +5V	
28	VCC	Power supply: +5V	
29	VCC	Power supply: +5V	
30	VCC	Power supply: +5V	

Note (1) Connector part no.: JAE FI-X30SSL-HF or P-TWO 187053-30091 or equivalent

FFC connector pin order defined as follows

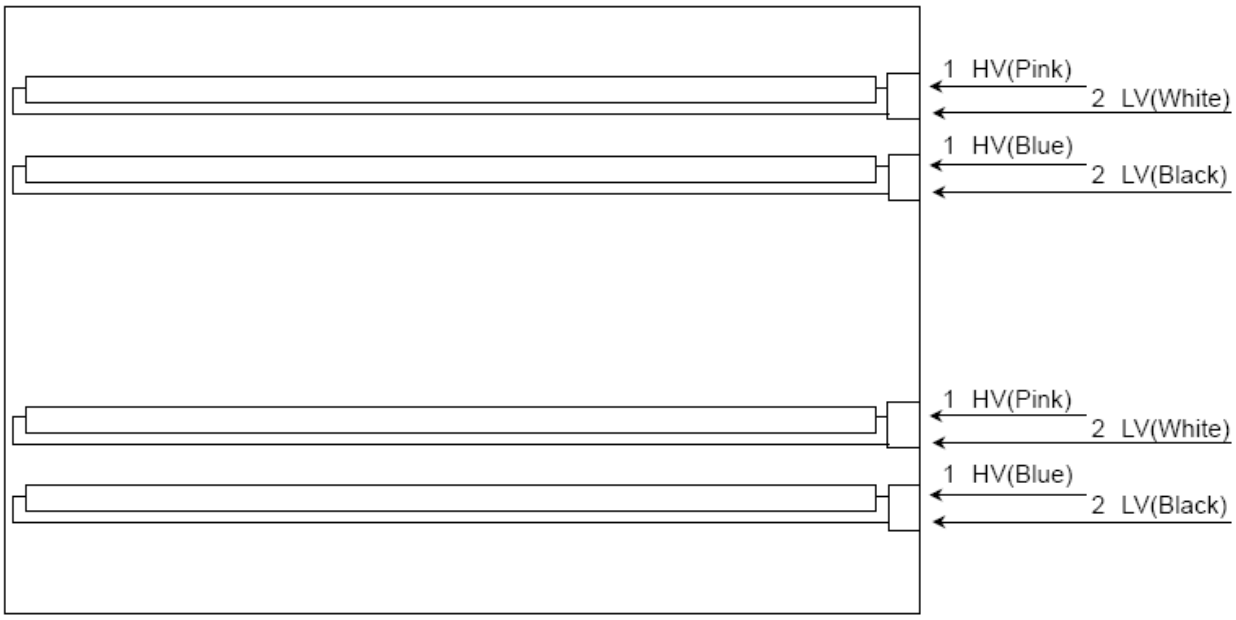


Note (2) Reserved for CMI internal use, please leave it open

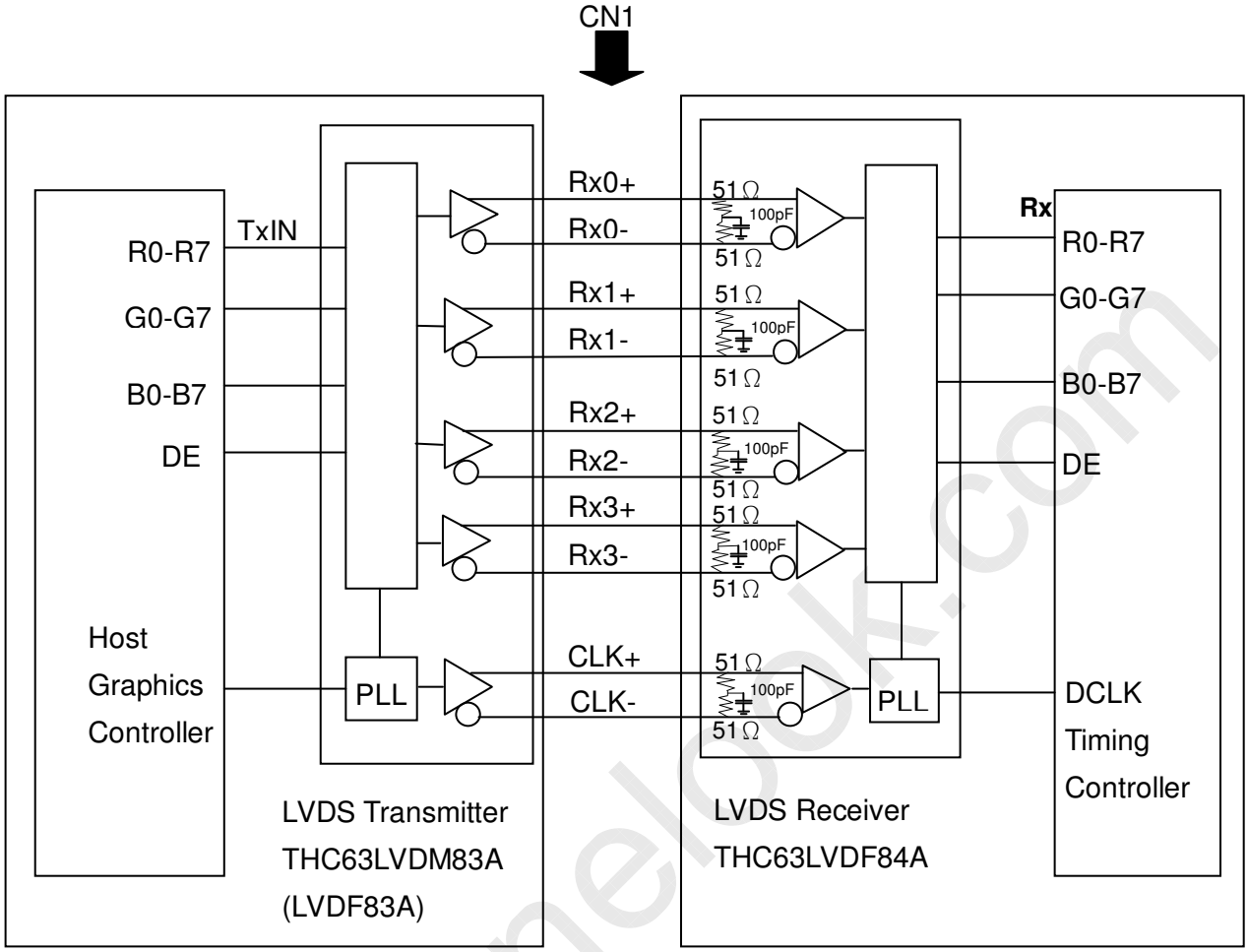
Note (3) Low = Connect to GND: JEIDA Format, High = connect to +3.3V or Open: VESA Format.

Please refer to 5.2 LVDS INTERFACE

5.2 BACKLIGHT UNIT



5.3 BLOCK DIAGRAM OF INTERFACE

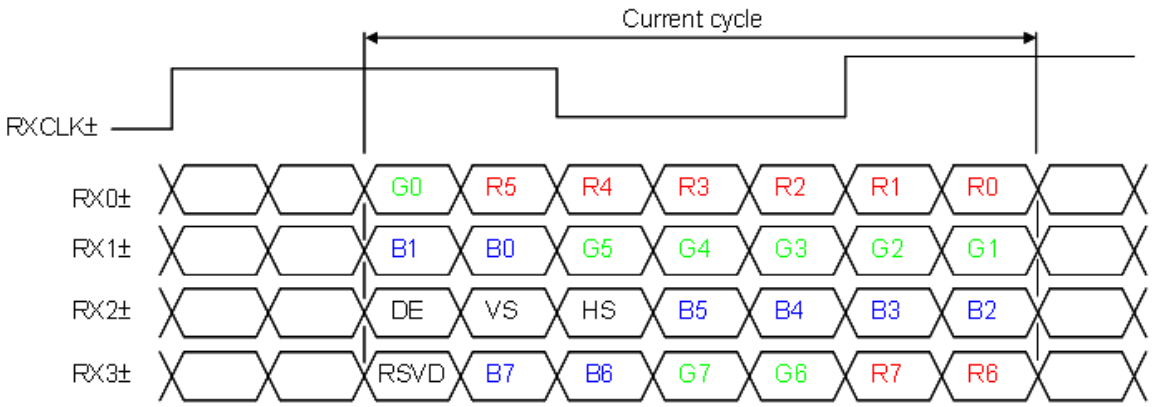


R0~R7 : Pixel R Data
G0~G7 : Pixel G Data
B0~B7 : Pixel B Data
DE : Data enable signal
DCLK : Data clock signal

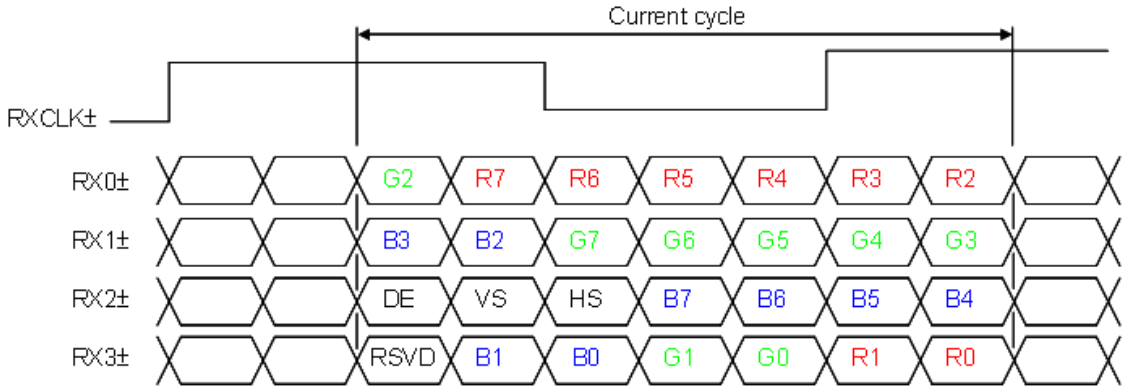
Note (1) The system must have the transmitter to drive the module.
Note (2) LVDS cable impedance shall be 50 ohms per signal line or about 100 ohms per twist-pair line when it is used differentially.

5.4 LVDS INTERFACE

VESA Format: SELLVDS = H or Open



JEIDA Format: SELLVDS = L



R0~R7 : Pixel R Data (7; MSB, 0; LSB)

G0~G7 : Pixel G Data (7; MSB, 0; LSB)

B0~B7 : Pixel B Data (7; MSB, 0; LSB)

DE : Data enable signal

Notes (1) RSVD (reserved) pins on the transmitter shall be "H" or ("L" or OPEN)

5.5 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of the color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Red (253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green (253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green (254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green (255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
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	Blue (253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue (254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue (255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

6. INTERFACE TIMING

6.1 INPUT SIGNAL TIMING SPECIFICATIONS

(Ta = 25 ± 2 ℃)

The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	F_{clkin} (=1/TC)	60	76	82	MHz	
	Input cycle to cycle jitter	T_{rcl}	—	—	200	ps	(3)
	Spread spectrum modulation range	F_{clkin_mod}	F_{clkin}-2%	—	F_{clkin}+2%	MHz	(4)
	Spread spectrum modulation frequency	F_{SSM}	—	—	200	KHz	
LVDS Receiver Data	Setup Time	Tlvsu	600	—	—	ps	(5)
	Hold Time	Tlvhd	600	—	—	ps	
Vertical Active Display Term	Frame Rate	F_{r5}	47	50	53	Hz	
		F_{r6}	57	60	63	Hz	
	Total	Tv	778	806	1000	Th	Tv=Tvd+Tvb
	Display	Tvd	768	768	768	Th	
	Blank	Tvb	10	38	232	Th	
Horizontal Active Display Term	Total	Th	1442	1560	1936	Tc	Th=Thd+Thb
	Display	Thd	1366	1366	1366	Tc	
	Blank	Thb	76	194	570	Tc	

"Enlarging Vtotal from Max 888Th to 1050Th is OK, provided that both pixel clock & Htotal are within the specified range in the spec."

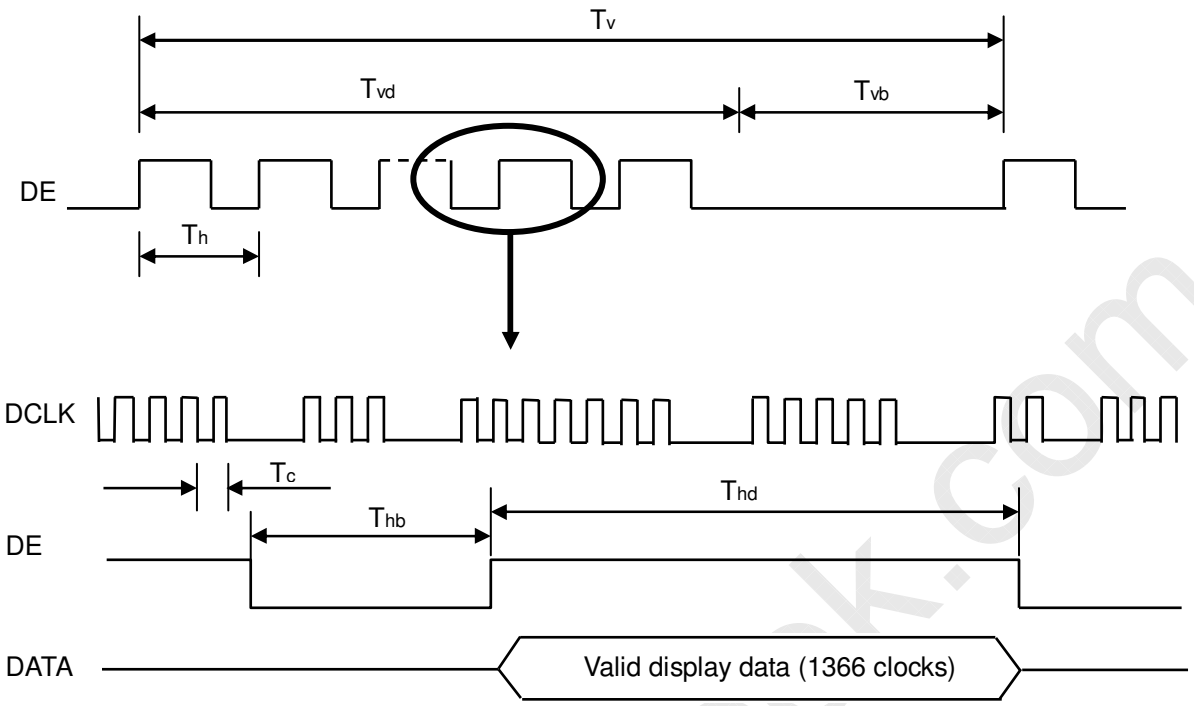
Note (1) Please make sure the range of pixel clock has follow the below equation：

$$Fclkin(max) \geqq Fr6 \times Tv \times Th$$

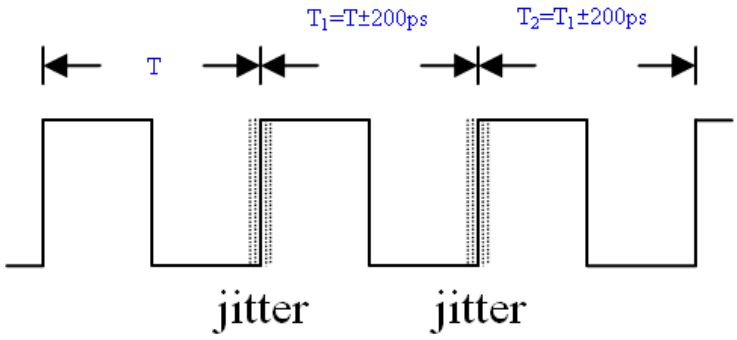
$$Fr5 \times Tv \times Th \geqq Fclkin(min)$$

Note (2) This module is operated in DE only mode and please follow the input signal timing diagram below：

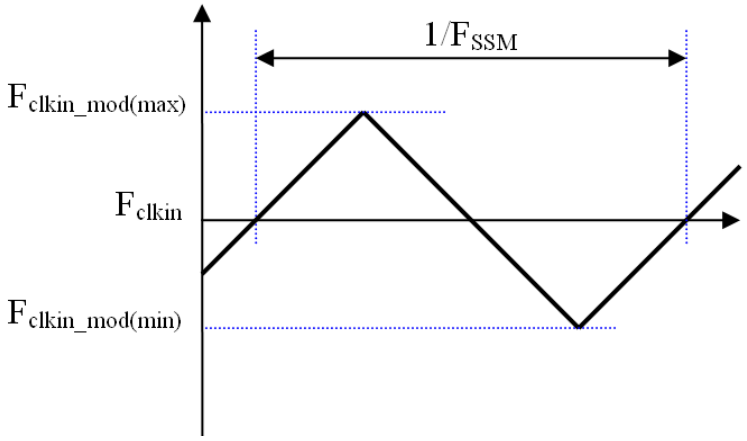
INPUT SIGNAL TIMING DIAGRAM



Note (3) The input clock cycle-to-cycle jitter is defined as below figures. Trcl = | T_1 – T |

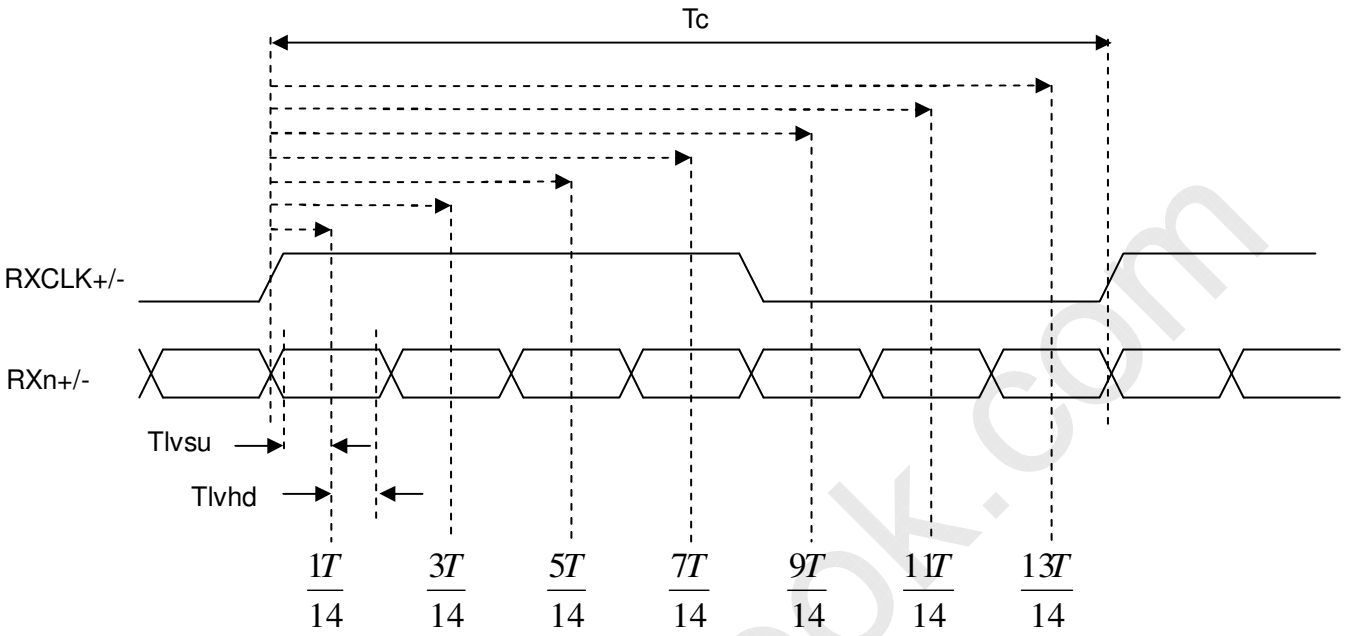


Note (4) The SSCG (Spread spectrum clock generator) is defined as below figures.



Note (5) The LVDS timing diagram and setup/hold time is defined and showing as the following figures.

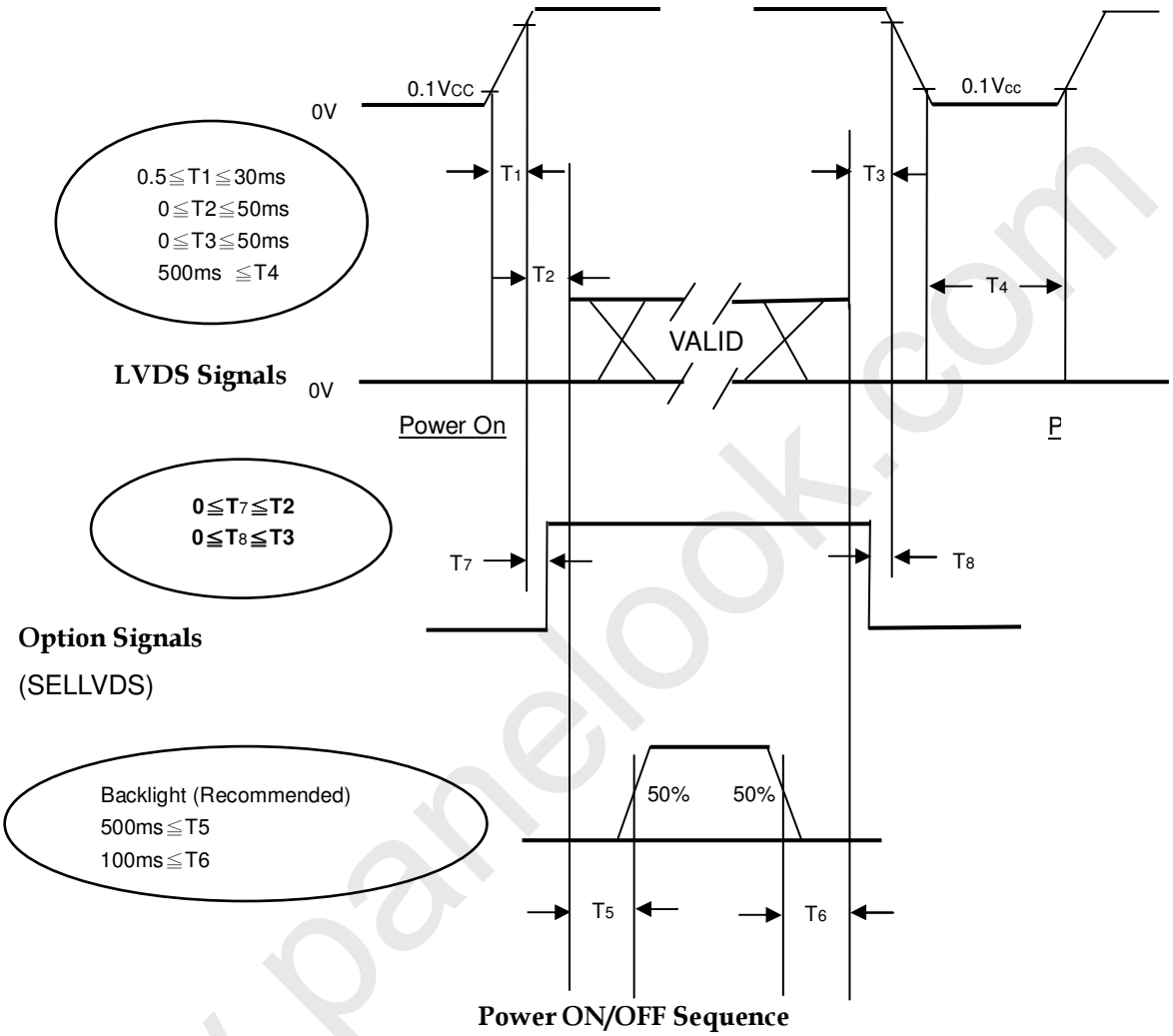
LVDS RECEIVER INTERFACE TIMING DIAGRAM



6.2 POWER ON/OFF SEQUENCE

(Ta = 25 ± 2 °C)

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should be as the diagram below.



Power ON/OFF Sequence

Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of Vcc is in off level, please keep the level of input signals on the low or high impedance. If T2<0, that maybe cause electrical overstress failure.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25 ± 2	℃
Ambient Humidity	Ha	50 ± 10	%RH
Supply Voltage	V_{CC}	5.0	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Inverter Current	I_L	7.0	mA
Inverter Driving Frequency	F_L	50	KHz
Dimming frequency	F_B	160(type)	Hz
Minimum Duty Ratio	D_{MIN}	20	%
Inverter	Ampower (27-D024817)		

The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 1 hour in a windless room.

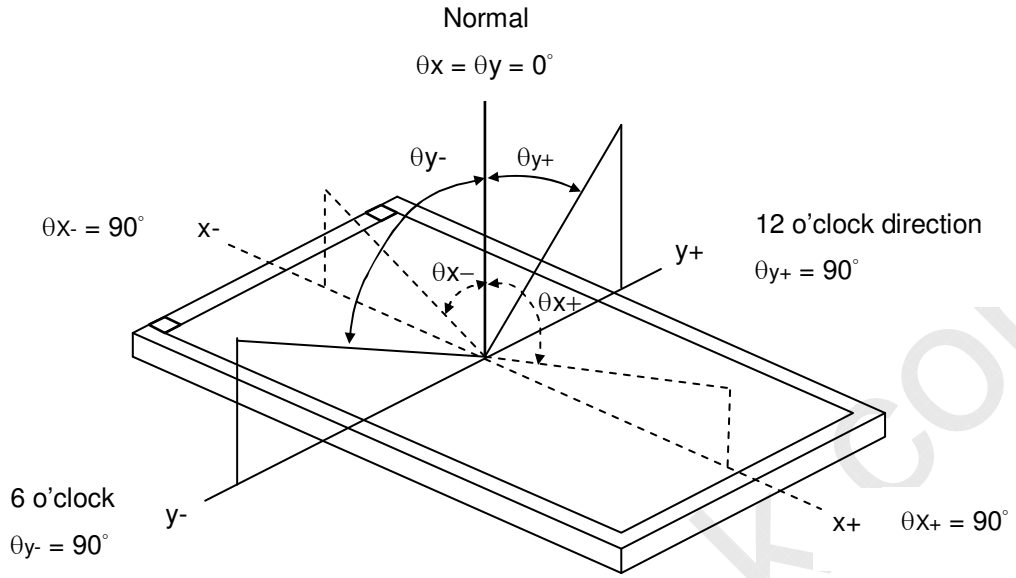
7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items should be measured under the test conditions described in 7.1 and stable environment shown in 7.1.

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	θx=0°, θy =0° Viewing angle at normal direction	600	800	—		(2)
Response Time		T_R		—	1.3	2.2	ms	(3)
		T_F		—	3.7	5.8		
Center Luminance of White		L_C		300	400	—	cd/m²	(4)
White Variation		δW		—	—	1.3		(7)
Cross Talk		CT		—	—	4	%	(5)
Color Chromaticity	Red	Rx		Typ. -0.03	0.644	Typ. +0.03		(6)
		Ry			0.331			
	Green	Gx			0.273			
		Gy			0.588			
	Blue	Bx			0.151			
		By			0.061			
	White	Wx			0.285			
		Wy			0.293			
	Color Gamut	CG		68	72	—	%	NTSC Ratio
Viewing Angle	Horizontal	θx+	CR>10	75	85	—	Deg.	(1) (6)
		θx-		75	85	—		
	Vertical	θ_Y+		70	80	—		
		θ_Y-		70	80	—		

Note (1) Definition of Viewing Angle (θx, θy):

Viewing angles are measured by Autronic Conoscope Cono-80



Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

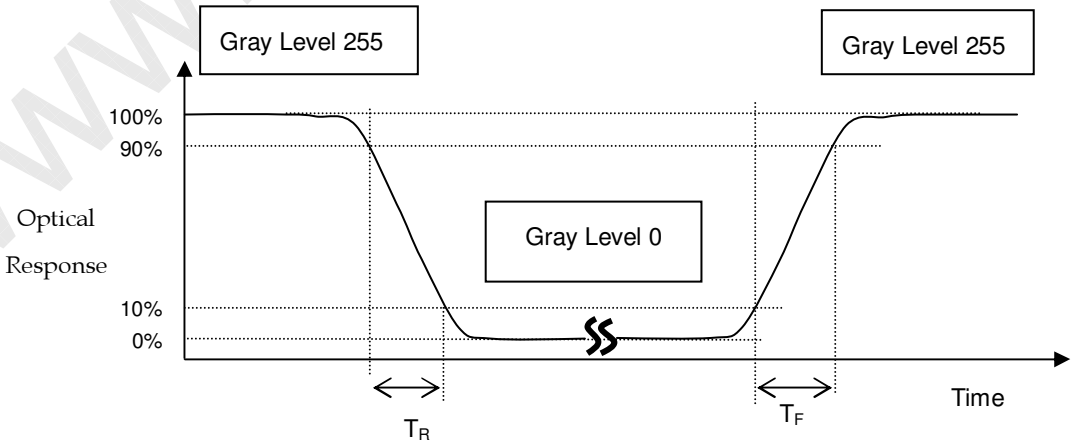
L255: Luminance of gray level 255

L0: Luminance of gray level 0

CR = CR (5),

CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (7).

Note (3) Definition of Response Time (T_R, T_F):



Note (4) Definition of Luminance of White (L_C):

Measure the luminance of gray level 255 at center point and 5 points

L_C = L (5)

L (X) is corresponding to the luminance of the point X at the figure in Note (7).

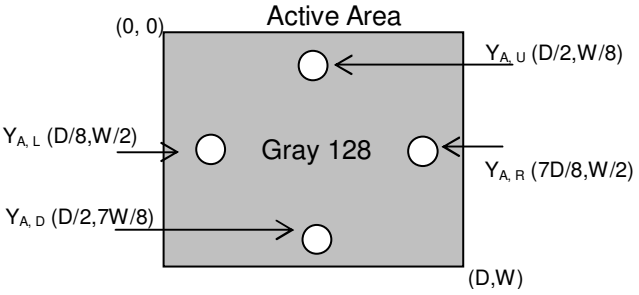
Note (5) Definition of Cross Talk (CT):

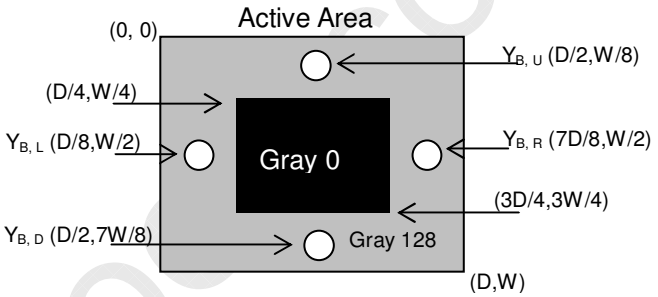
$CT = | Y_B - Y_A | / Y_A \times 100$ (%)

Where:

Y_A = Luminance of measured location without gray level 0 pattern (cd/m²)

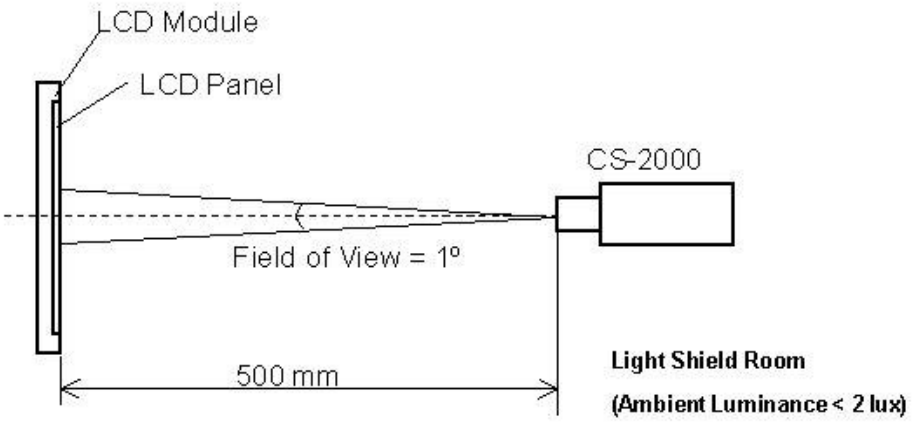
Y_B = Luminance of measured location with gray level 0 pattern (cd/m²)





Note (6) Measurement Setup:

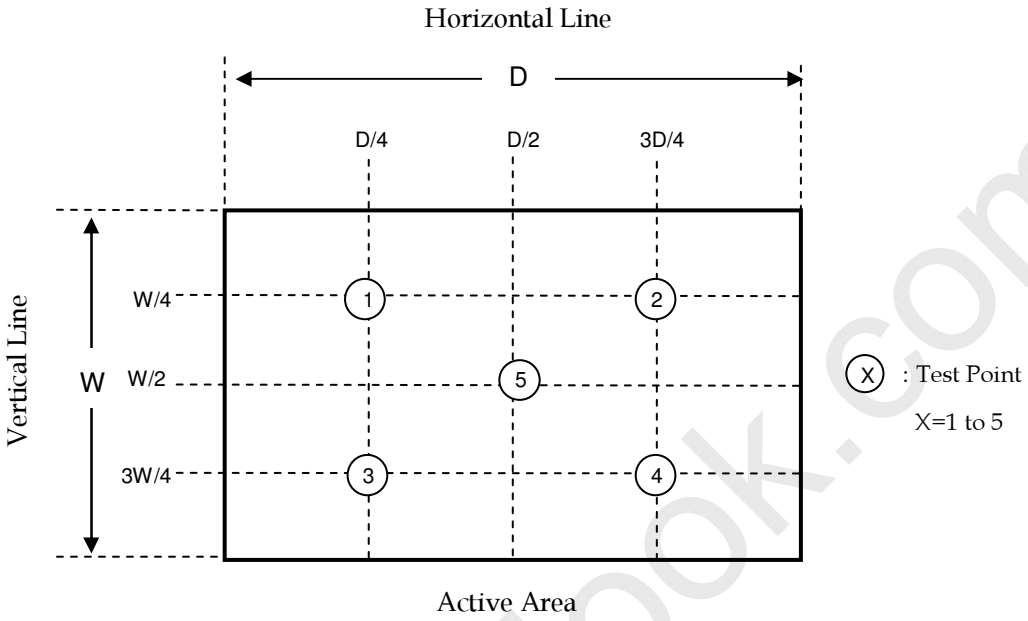
The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 1 hour in a windless room.



Note (7) Definition of White Variation (δW):

Measure the luminance of gray level 255 at 5 points

δW = Maximum [L (1), L (2), L (3), L (4), L (5)] / Minimum [L (1), L (2), L (3), L (4), L (5)]



8. PRECAUTIONS

8.1 ASSEMBLY AND HANDLING PRECAUTIONS

[1] Do not apply rough force such as bending or twisting to the module during assembly.

[2] It is recommended to assemble or to install a module into the user's system in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.

[3] Do not apply pressure or impulse to the module to prevent the damage of LCD panel and Backlight.

[4] Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.

[5] Do not plug in or pull out the I/F connector while the module is in operation.

[6] Do not disassemble the module.

[7] Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.

[8] Moisture can easily penetrate into LCD module and may cause the damage during operation.

[9] When storing modules as spares for a long time, the following precaution is necessary.

[9.1] Do not leave the module in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0 to 35℃at normal humidity without condensation.

[9.2] The module shall be stored in dark place. Do not store the TFT-LCD module in direct sunlight or fluorescent light.

[10] When ambient temperature is lower than 10°C, the display quality might be reduced. For example, the response time will become slow, and the starting voltage of CCFL will be higher than that of room temperature.

8.2 SAFETY PRECAUTIONS

[1] The startup voltage of a backlight is over 1000 Volts. It may cause an electrical shock while assembling with the inverter. Do not disassemble the module or insert anything into the backlight unit.

[2] If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.

[3] After the module's end of life, it is not harmful in case of normal operation and storage.

8.3 SAFETY STANDARDS

The LCD module should be certified with safety regulations as follows:

[1] UL60950-1 or updated standard.

[2] IEC60950-1 or updated standard.

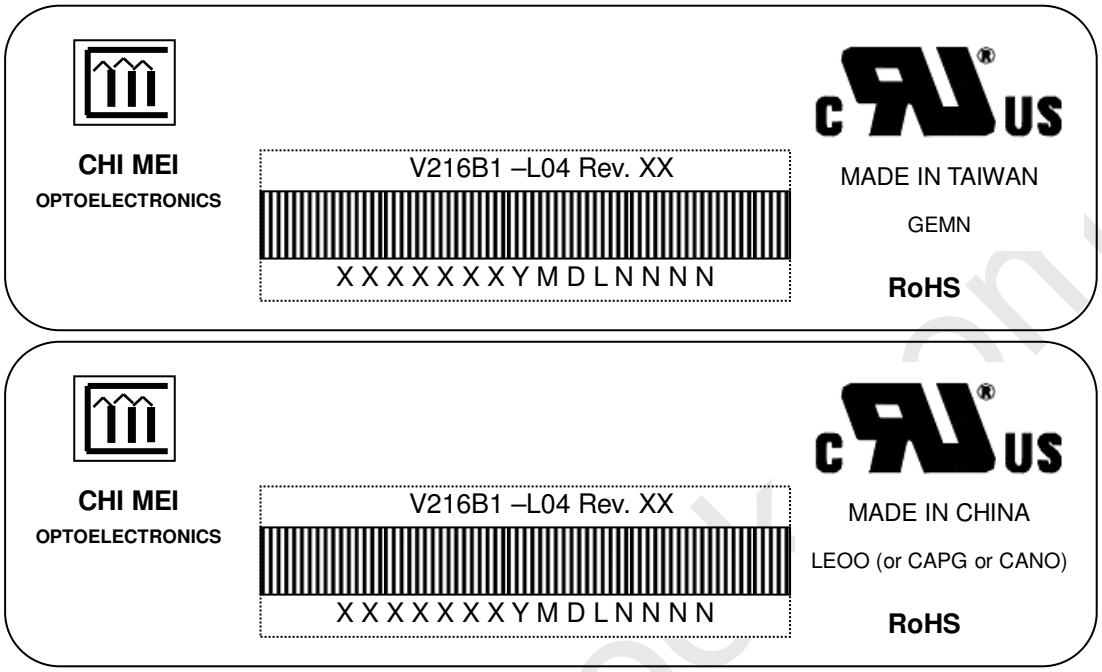
[3] UL60065 or updated standard.

[4] IEC60065 or updated standard.

9. DEFINITION OF LABELS

9.1 CMI MODULE LABEL

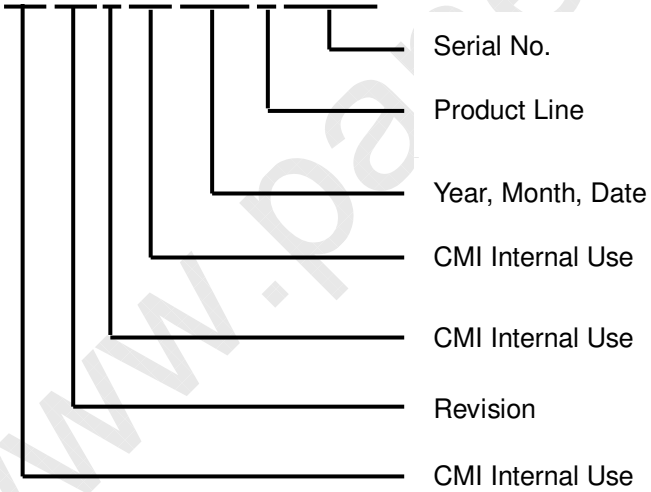
The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



Model Name: V216B1-L04

Revision: Rev. XX, for example: A0, A1… B1, B2… or C1, C2…etc.

Serial ID: X X X X X X X Y M D L N N N N



Serial ID includes the information as below:

Manufactured Date:

Year: 2001=1, 2002=2, 2003=3, 2004=4…2010=0, 2011=1, 2012=2…

Month: 1~9, A~C, for Jan. ~ Dec.

Day: 1~9, A~Y, for 1st to 31st, exclude I, O, and U.

Revision Code: Cover all the change

Serial No.: Manufacturing sequence of product

Product Line: 1 → Line1, 2 → Line 2, …etc.

10. PACKAGING

10.1 PACKAGING SPECIFICATIONS

(1) 11 LCD TV modules / 1 Box

(2) Box dimensions : 563(L) x 417(W) x 375(H)mm

(3) Weight : approximately 27.5Kg(11 modules per box)

10.2 PACKAGING METHOD

Figures 10-1 and 10-2 are the packing method

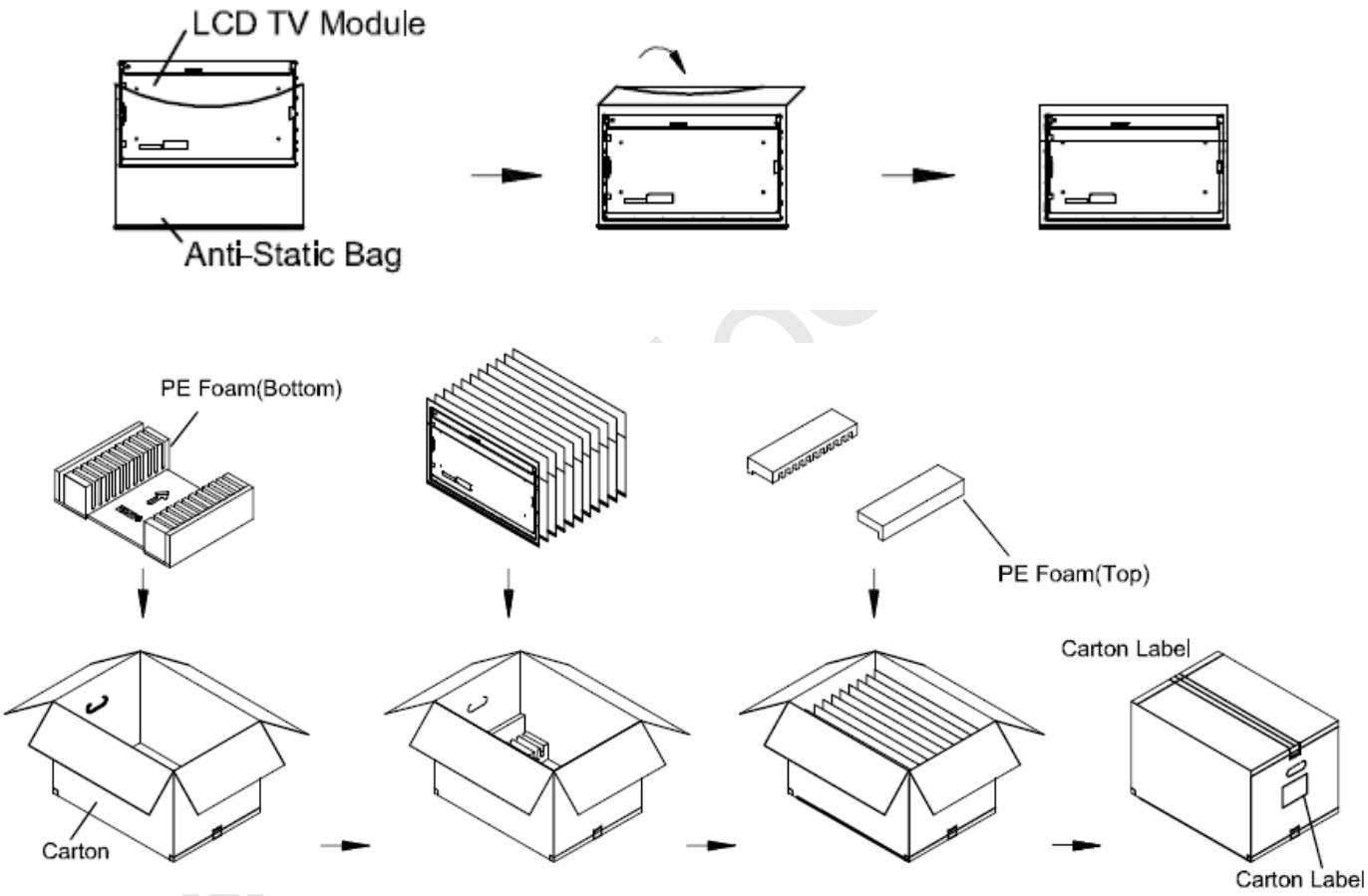


Figure 10-1 packing method

Sea / Land Transportation
(40ft HQ Container)
Pallet Stack:L850*W1150*H2530mm

Sea / Land Transportation
(40ft Container)
Pallet Stack:L850*W1150*H2155mm

Air Transportation

Pallet Stack:L850*W1150*H1265mm

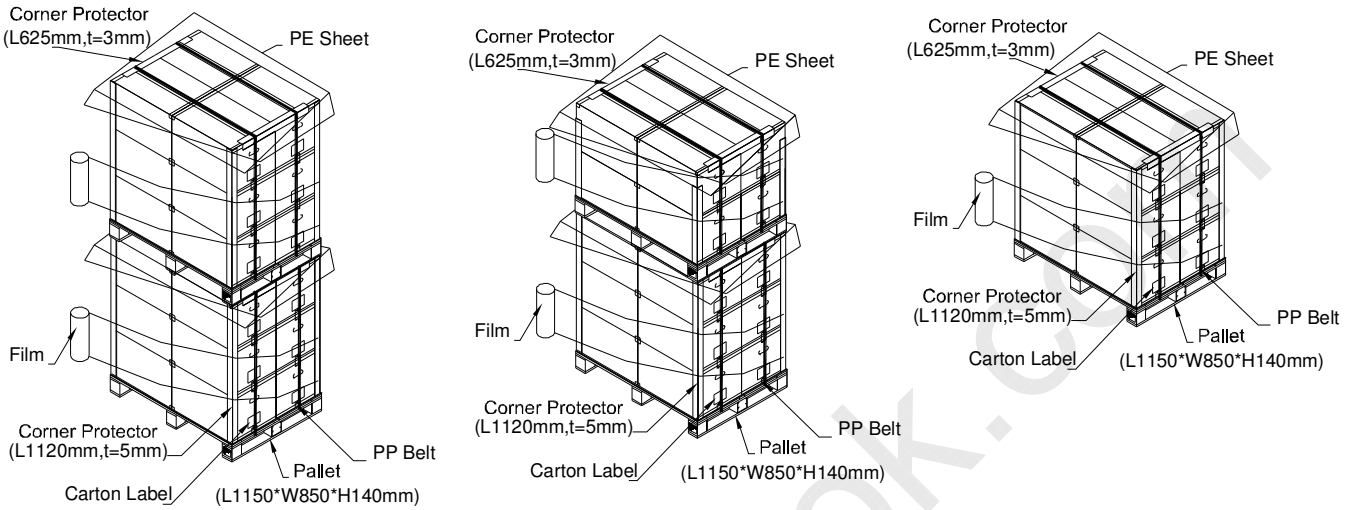


Figure 10-2 packing method

11. MECHANICAL CHARACTERISTIC